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REMARKS

The Examiner first objects to the specification for the informality noted therein, namely a misspelling of the word "lever" in paragraph [021]. In response thereto, paragraph [022] is suitably amended to overcome the note error. The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw the objection to the specification in view of the forgoing.

Claims 3 and 4 are then rejected, under 35 U.S.C. 103, over DE '497 in view of Newbigging '893. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

In response, and after consideration of the cited prior art, claim 3 is appropriately amended and new claims 5 and 6 are entered in this case to more explicitly recite the distinctions of the present invention over the applied prior art.

First considering the present invention, as recited in amended claim 3 and in new claim 5, the present invention is directed to an electro-pneumatic switching unit for a vehicle transmission (6) that will prevent the switching unit from performing a shift operation, such as shifting from a current gear ratio to a lower gear ratio, except under permissible conditions that, for example, will not result in at least a potential for damage to the transmission of vehicle power unit or an unsafe driving action.

According to the present invention as recited in the claims, the transmission and switching units include a splitter group transmission (12) pneumatically switched via a first set of valves (36, 38) and a range-change group transmission (14) that is pneumatically switched between a first range and a second range, via a second set of valves (44, 46), wherein the switching of the second set of valves (44, 46) can be manually preselected by a vehicle driver on a gear lever (16).

As recited in the claims, the switching unit includes a disengaging valve (42) that is mechanically coupled with the gear lever (16) and pneumatically coupled with the second set of valves (44, 46) to pneumatically actuate the second set of valves (44, 46) when the gear lever (16) is in a neutral position. When the second set of valves (44, 46) is actuated by the disengaging valve (42), the switching operations of the second set of valves (44, 46), and thereby the switching of the range-change group transmission (14), are then controlled by the electronic control device (20).

The switching unit, however, further includes a locking device (54, 56) that is pneumatically actuated by the second set of valves (44, 46), according to a gear ratio range of the the second set of valves (44, 46), and is mechanically coupled with the gear lever (16) to

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mechanically prevent the manual switching of an inadmissible reduction ratio(s) of the vehicle transmission (6).

Turning now to the applied prior art, DE '497 relates to an electro-pneumatic switching unit for a vehicle transmission wherein the transmission and switching unit include a splitter group transmission (12) pneumatically switched via a first set of valves (36, 38) and a range-change group transmission (14) that is pneumatically switched between a first range and a second range, via a second set of valves (44, 46), wherein the switching of the second set of valves (44, 46) can be manually preselected by a vehicle driver on a gear lever (16).

The DE '497 switching unit also includes a disengaging valve (42) that is mechanically coupled with the gear lever (16) and pneumatically coupled with the second set of valves (44, 46) to pneumatically actuate the second set of valves (44, 46) when the gear lever (16) is in a neutral position. When the second set of valves (44, 46) are actuated by the disengaging valve (42), the switching operation of the second set of valves (44, 46), and thereby the switching of the range-change group transmission (14), are then controlled by the electronic control device (20).

The DE '497 switching unit, however, does not include a locking device (54, 56) that is pneumatically actuated by the second set of valves (44, 46), according to a gear ratio range of the the second set of valves (44, 46), which is mechanically coupled with the gear lever (16) to mechanically prevent the manual switching of inadmissible reduction ratios of the vehicle transmission (6), as presently recited in the amended claims.

Instead, and in fundamental distinction from the present invention as recited in the pending claims, the locking device (54) of DE '497 is controlled and pneumatically actuated by a locking valve (52) that is directly coupled from the air supply (34) which, in turn, is directly controlled by the electronic control device (20). As a consequence, and in fundamental contrast from the present invention, the locking device (54) of DE '497 is directly and entirely controlled by the electronic control device (20) *instead of being controlled by the valves (44, 46) of the second set of valves*, as presently recited in the amended claims.

The present invention is thereby completely and fundamentally distinguished from DE '497 because, according to the present invention, whether the locking device (54) permits or prohibits a given gear switching operation is directly and mechanically dependent upon the actual current range group transmission ratio, as directly represented and controlled by the positions of the valves (44, 46) of the second set of valves. The DE '497 system, however, is directly contrary to the present invention because, according to the DE '497 system, the locking unit (54) is not controlled in any way by the valves (44, 46) of the second set of

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valves but is instead controlled directly and solely by the electronic control device (20) and thereby has no relationship to the actual current transmission gear ratio.

Stated another way, and very simply, the system of the present invention permits or prevents shifting operations based upon direct physical interrelationships with the actual current gear ratio as controlled by the second valve set, thus providing a direct, positive, physical relationship between the gear ratios and the locking device. The DE '497 system, however, and in distinct contrast from the present invention, permits or prevents shifting operations based upon what the electronic control device thinks the current gear ratio is.

It is, therefore, the Applicant's belief and position that the present invention, as recited in amended claim 3 and newly entered claim 5 and thereby in dependent claims 4 and 6, is fully and patentably distinguished over and from the teachings of DE '497 under the requirements and provisions of 35 U.S.C. § 103 for the reasons discussed above.

Next considering the teachings of Newbigging '893, this reference relates to a downshift inhibitor for a transmission wherein a multi-position plunger 214 engages with one or more positions 216C of a gear ratio controlling cross shaft 200 such that the mechanical interaction of the plunger and the position on the cross shaft permits the cross shaft to shift to only those gear ratios that are permissible for the current gear ratio. The position of the multi-position plunger 214, and thus the set of currently acceptable gear ratios, is controlled solely by monitoring the current speed of the vehicle so that, for example, the transmission cannot be downshifted to a too low gear for the current vehicle speed. It is, therefore, apparent that there are a number of fundamental distinctions between the present invention and the teachings of Newbigging '893.

First, it must be noted that the Newbigging '893 mechanism is entirely mechanical and electrical in construction and operation and does not include any form of pneumatic valve or device. In addition, the present invention is recited as implemented in a transmission that includes a splitter group transmission (12) pneumatically switched via a first set of valves (36, 38) and a range-change group transmission (14) that is pneumatically switched between a first range and a second range via a second set of valves (44, 46) while the Newbigging '893 transmission does not include any such elements.

The Newbigging '893 mechanism is thereby not only of a fundamentally different structure than that recited in the present invention, but does not, and cannot, operate in the manner of the present invention because of those fundamental mechanical differences and thereby does not in any way teach, suggest or disclose any of the elements of the present invention as explicitly recited in the amended and newly presented claims.

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In still further fundamental distinction between the present invention and Newbigging '893, whether the mechanism of the present invention permits or prohibits a given gear switching operation is directly and mechanically dependent upon the actual current range group transmission ratio, as directly represented and controlled by the positions of the valves (44, 46) of the second set of valves. That is, the operation of locking device (54) is directly and solely controlled by the positions of range group control valves (44, 46).

In this regard, it is noted that the pending specification states that the electronic control device (20) monitors the vehicle speed, but it must also be noted and understood that this monitoring of the vehicle speed by electronic control device (20) is not involved, either directly or indirectly, in the operation of the locking device (54) of the present invention. As recited explicitly in the claims, the locking device (54), and thus the permitted gear switching operations, are directly and physically controlled solely by the current setting of the valves (44, 46) of the second valve set.

In complete and fundamental contrast from the present invention, the Newbigging '893 mechanism controls the position assumed by multi-position plunger 214, and thus the gear ratios than can be shifted by the transmission, solely by monitoring the vehicle speed which is converted into an electrical signal to the electro-mechanical plunger 214. According to the Newbigging '893 mechanism, therefore, the permissible and impermissible gear ratios at any given time are totally independent of the actual gear ratio of the transmission and are not determined in any way by the actual current gear ratio of the transmission.

As discussed above, this primary feature of the Newbigging '893 mechanism is thereby entirely and fundamentally contrary to the present invention as recited in the amended and newly entered claims, which state that the operation of locking device (54) is directly and solely controlled by the positions of range group control valves (44, 46). It is, therefore, the Applicant's belief and position that the presently claimed invention, as recited in pending claims 3 and 5 and thereby in dependent claims 4 and 6, is fully and patentably distinguished over and from the teachings of Newbigging '893 under the requirements and provisions of 35 U.S.C. § 103 for the reasons discussed above.

Now considering the combination of DE '497 in view of Newbigging '893, as indicated by the Examiner this combination would result in the use of the Newbigging '893 multi-position plunger 214 mechanism in the DE '497 mechanism with the Newbigging '893 multi-position plunger 214 replacing the locking valve (52) and locking device (54) of the DE '497 mechanism. The Applicant would like to first note that this combination is unlikely to occur to one of ordinary skill in the art for several reasons, one being that the two mechanisms are directed to two very different types of transmissions. Another reason is that there seems little advantage in

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replacing a pneumatic locking mechanism, in a pneumatically controlled transmission, with an electrically controlled locking mechanism.

Still more significantly, however, is that the combination will still not yield any mechanism having even a reasonable similarity to the presently claimed invention. That is, in the DE '497 mechanism the locking device (54) is controlled by a locking valve (52) which is controlled by the electronic control device (20) so that, in fundamental contrast from the present invention as discussed above, the locking device (54) of the DE '497 mechanism is not controlled by the actual current range gear setting as represented by the settings of the valves (44, 46) of the second valve set.

If the locking device (54) and locking valve (52) of the DE '497 mechanism is replaced by the multi-position plunger 214 mechanism of Newbigging '893, the end result would be a locking mechanism that is not controlled by the valves (44, 46) of the range gear transmission but a mechanism wherein the locking mechanism is controlled solely by the electronic control device (20). In addition, and in still further fundamental distinction between the present invention and the combined teachings of the DE '497 and Newbigging '893 references, the resulting locking mechanism would be controlled solely by the vehicle speed and not by the actual current range gear setting as represented by range gear transmission valves (44, 46).

It is, therefore, the Applicant's belief and position that the present invention, as recited in pending claims 3 and 5 and thereby in dependent claims 4 and 6, is fully and patentably distinguished over and from the teachings and suggestions of DE '497 in view of Newbigging '893 under the requirements and provisions of 35 U.S.C. § 103 for the reasons discussed above. The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw all rejections of claims 3-6, under 35 U.S.C. § 103, in view of DE '497 and/or Newbigging '893 and allow pending claims 3-6.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the DE '497 and/or Newbigging '893 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise

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In this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.


In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

Enclosed for the Examiner's consideration is a copy of EP 1 561 053 B1 which corresponds to the above identified application and recently issued in Europe with claims having similar scope to the presently pending claims.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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